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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,449	07/01/2003	Thomas Brinz	10191/3271	5411

26646 7590 01/17/2006

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EXAMINER

MOSS, KERI A

ART UNIT	PAPER NUMBER
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1743

DATE MAILED: 01/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/612,449

Applicant(s)

BRINZ ET AL.

Examiner

Keri A. Moss

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/1/03.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 5-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "functionalizable" is unclear. The Webster's dictionary definition of "functionalized" is: "To assign to some function or office." Examiner used this definition in interpreting the claims and interprets "functionalizable" to mean capable of function. Under such a definition, a hydrogen is functionalizable in the presence of a strong base.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

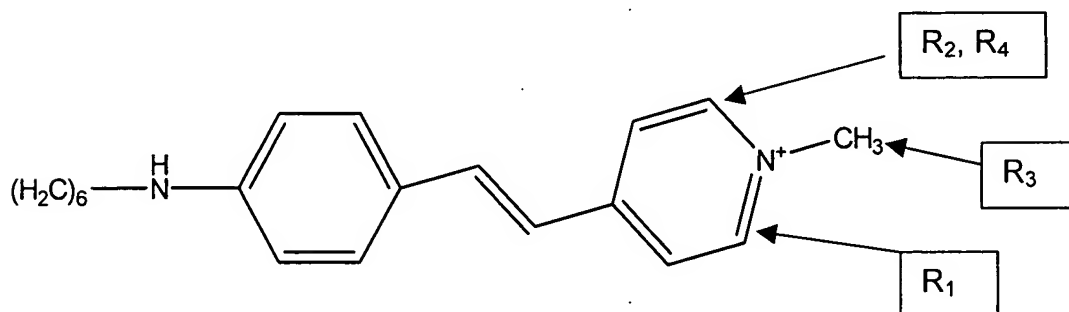
A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 6 and 9-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Miller (USP 6,645,771). Miller discloses a method for detecting nitrogen oxide

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gases involving an optical gas sensor (column 1 line 6) with a radiation source and a sensitive layer placed between the radiation source and a detector (column 4 line 59). The sensitive layer contains at least one polymer having at least one side chain with at least one basic or acidic functional group (Fig.2). The side chain may contain a quaternary ammonium function (Fig. 4) or a carboxylic function (Figs. 2-4). The sensitive layer contains polydimethylsiloxane (column 3 line 49) and may be placed on a substrate that is the detector (column 5 lines 34-37). The sensor layer may have a thickness of 20  $\mu\text{m}$  to 100  $\mu\text{m}$  (paragraph bridging columns 5 and 6). The side chain may have the general formula  $[(-R_1-)(-R_2)NR_3R_4]^+A^-$ , exemplified below



(Fig. 4; column 4 lines 16-18).

### ***Claim Rejections - 35 USC § 103***

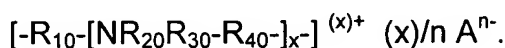
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

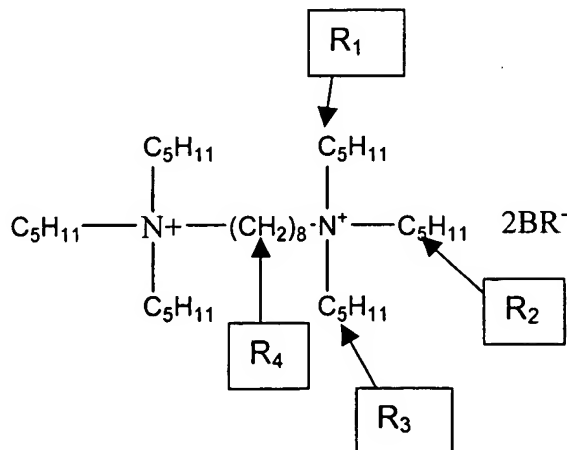
4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

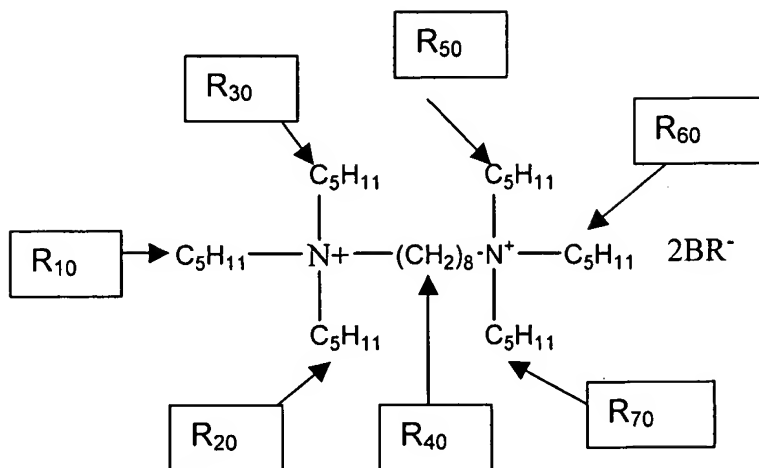
1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller in view of Albadran (PCT WO 00/02844). Miller does not expressly disclose a side chain with the general formulas



Albadran discloses a general formula and compounds to be used in the detection of carbon dioxide. One specific compound, Octane-1,8-di-tripentyl Ammonium Bromide (OTAB) has the formula claimed in the instant application, as demonstrated below:



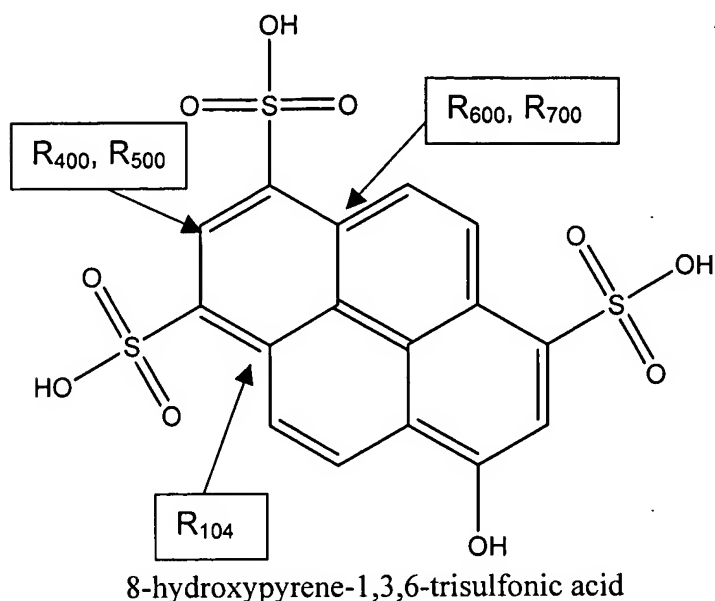


It is obvious to select a known material based on its suitability for the intended use. In re Leshin, 125 USPT 416, 417-418; 277 F2d 197 (CCPA 1960). OTAB provides the additional advantage of reducing the extent to which compound migration can occur, thereby allowing a wider choice of substrate materials which may be thermodynamically compatible with it (p. 2 lines 1-5). It would have been obvious to one of ordinary skill in the art to modify the Miller gas sensor structure and method with a compound that is known for its ability to optically detect carbon dioxide and to gain the additional advantage of having a wider choice of substrate materials that may be used with it.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller in view of W.R. Seitz et al. Anal Chim. Acta 160, 47 (1984) and further in view of Yafuso (USP 5,175,016). Miller does not expressly disclose a side chain with the general formula:



W.R. Seitz discloses a compound commonly referred to as HTPS that has optical sensor applications. HTPS has the following formula and matches the claimed formula of the instant application as labeled:



Yafuso teaches that HTPS is an optical indicator for carbon dioxide and is very effective for producing carbon dioxide sensing elements (paragraph bridging columns 6 and 7). It is obvious to select a known material based on its suitability for the intended use. In re Leshin, 125 USPT 416, 417-418; 277 F2d 197 (CCPA 1960). HTPS provides the additional advantage of having a reduced tendency to be subject to signal drift over time (paragraph bridging columns 6 and 7). Therefore, it would have been obvious for one of ordinary skill in the art to modify the structure of Miller's optical gas sensor with a side chain that is known for its suitability for optically indicating carbon dioxide and to gain the advantage of decreased signal drift over time for a longer lasting sensing element.

### **Conclusion**

Claims 5-8 are rejected under 35 U.S.C. 112. Claims 1-4, 6 and 9-13 are rejected under 35 U.S.C. 102(e) as anticipated by Miller. Claims 5 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller in view of the combinations given above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keri A. Moss whose telephone number is 571-272-8267. The examiner can normally be reached on 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

12/12/05



LYLE A. ALEXANDER  
PRIMARY EXAMINER